Sampling: Need and designs

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gef
Snow Leopard Trust
SNOW LEOPARD NETWORK
VOW LEOPARD
The Rufford Small Grants Foundation
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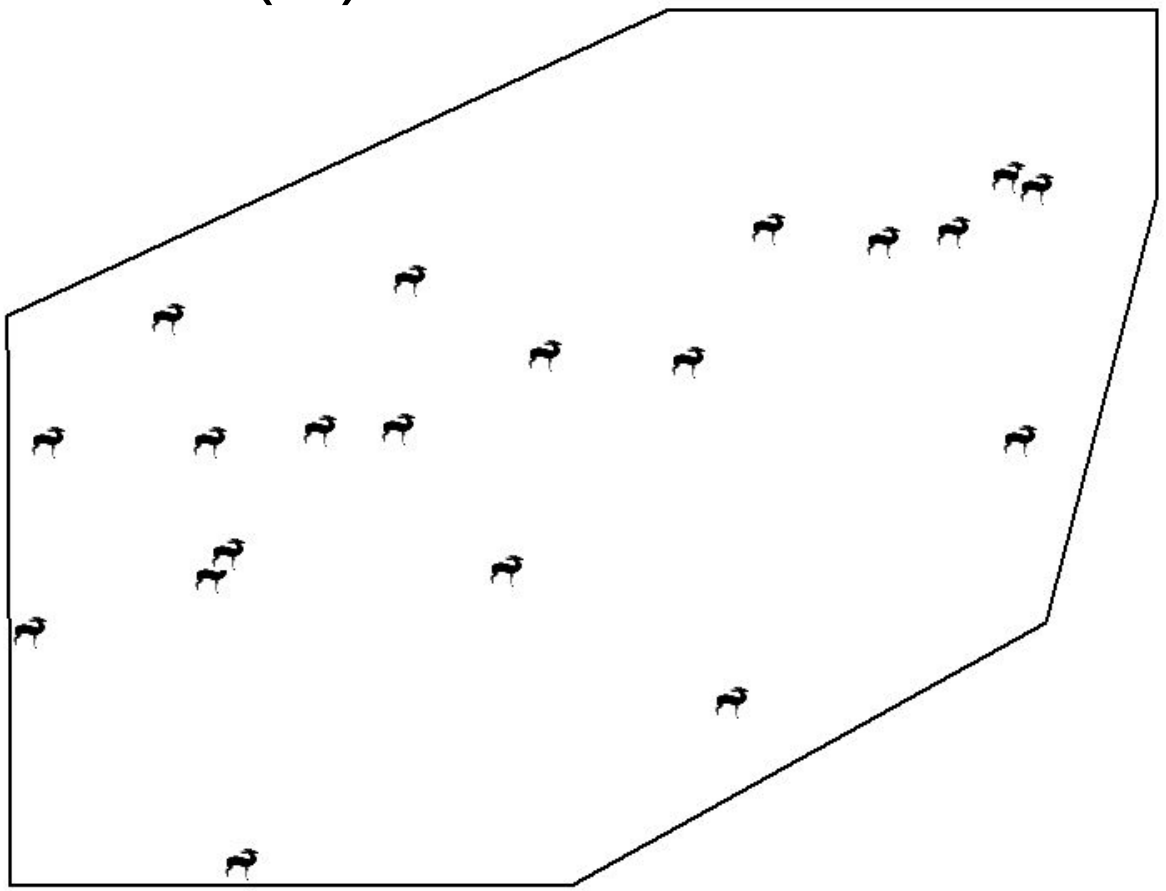
UNDP
Empowered lives. Resilient nations.

Quantitative ecology

- All about quantifying
  - Populations
  - Habitat
  - Behaviour
  - Environment

Some useful parameters

- Abundance (N)



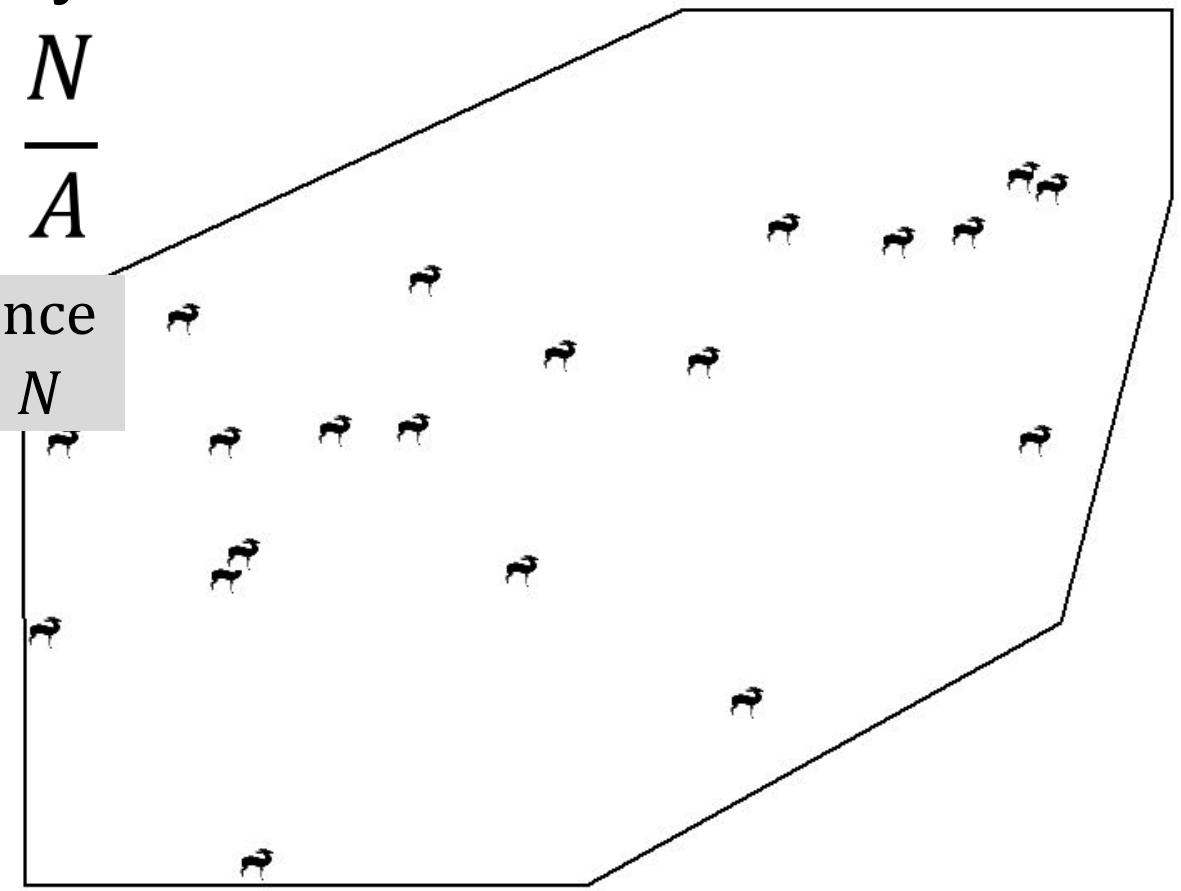
Some useful parameters

- Density

$$D = \frac{N}{A}$$

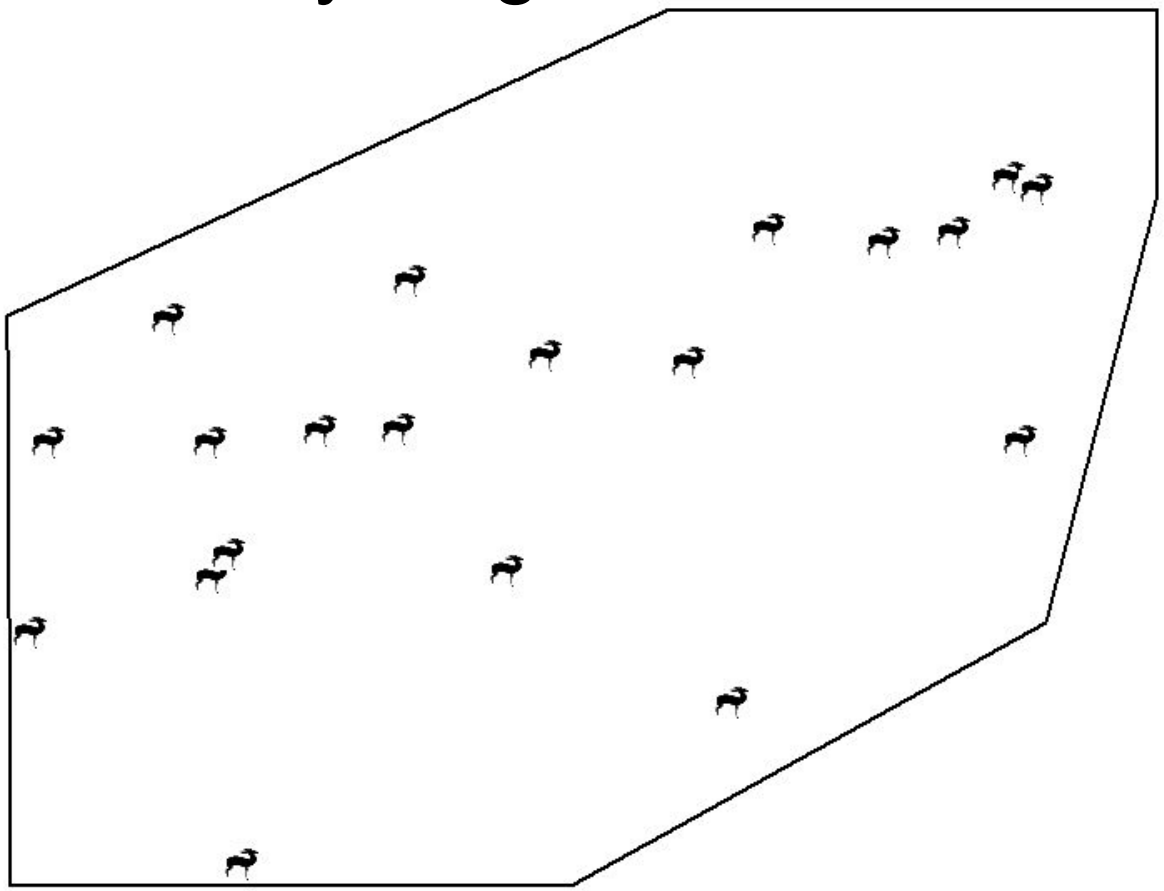
Abundance

$$D.A = N$$



How to quantify ?

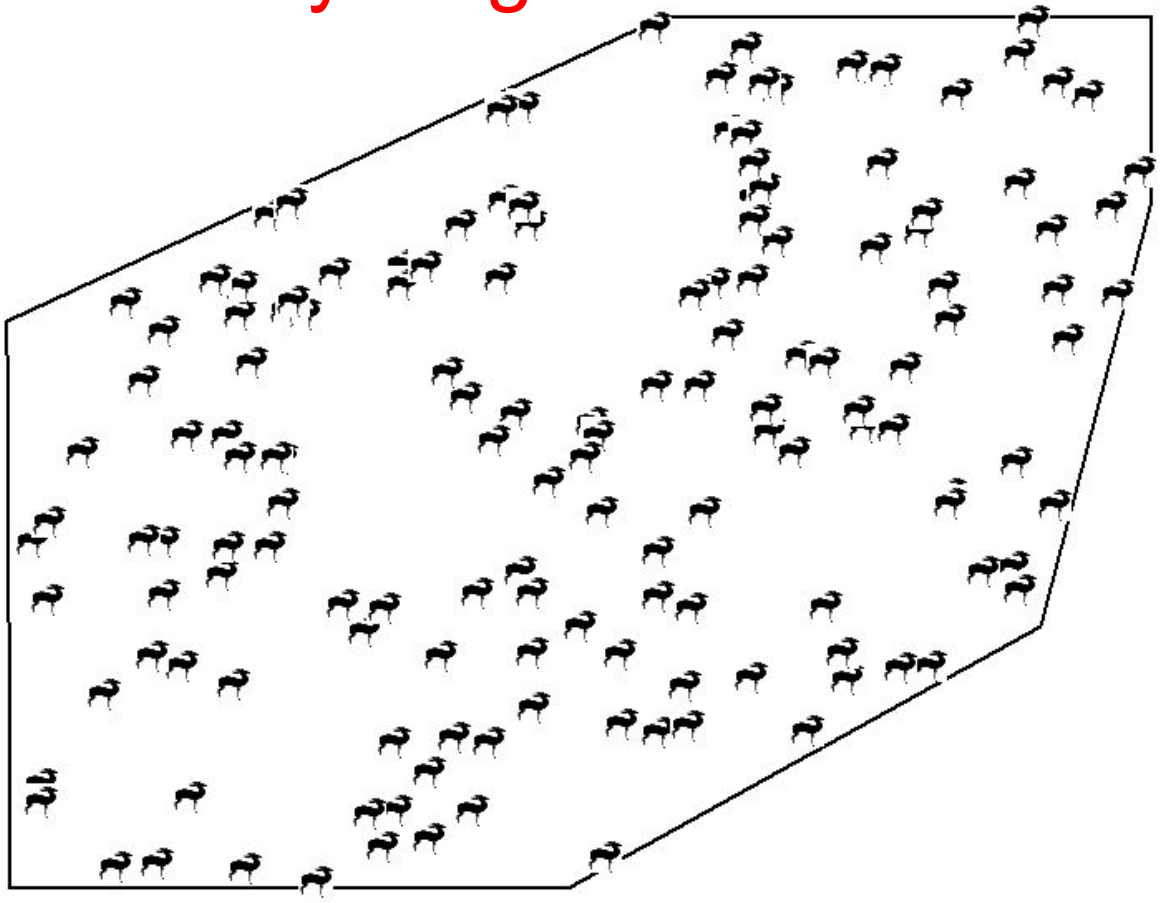
- Estimate everything



How to quantify…

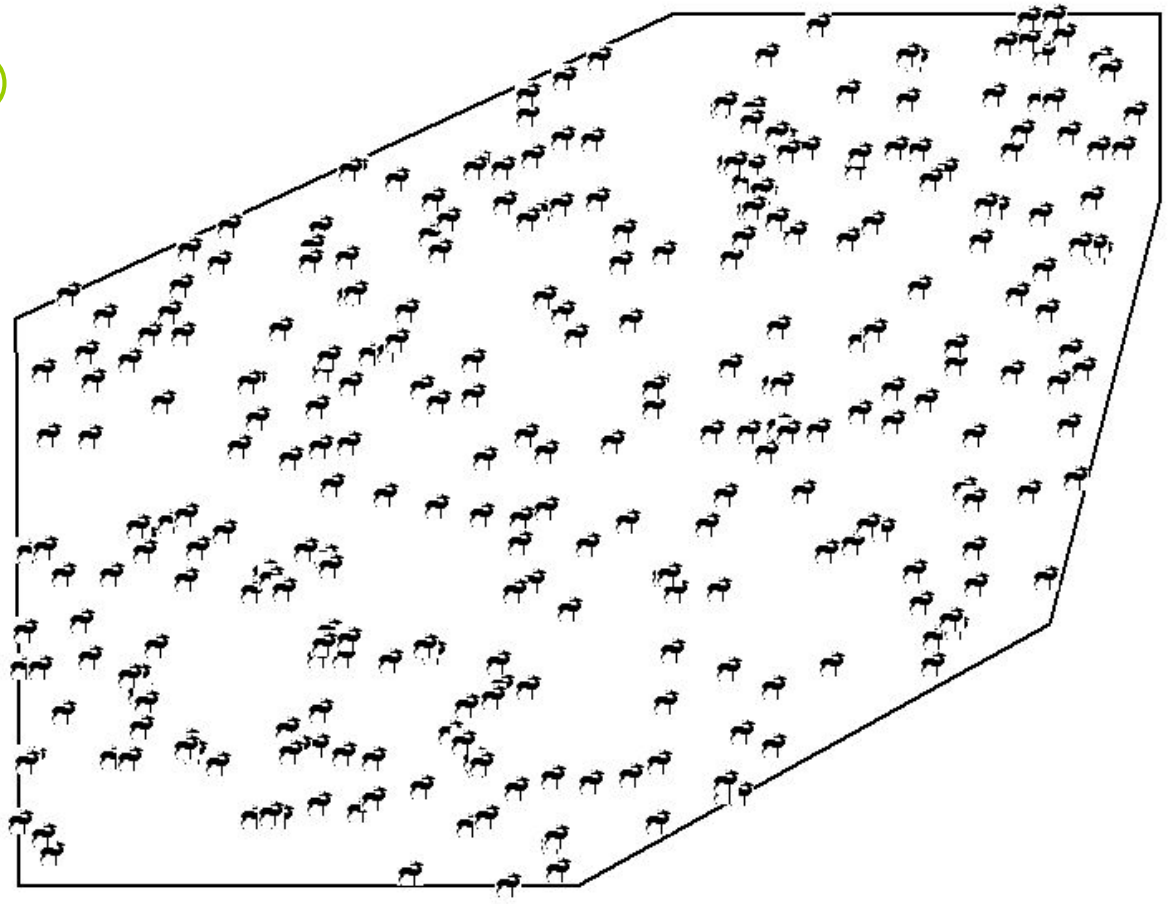
- Estimate everything?

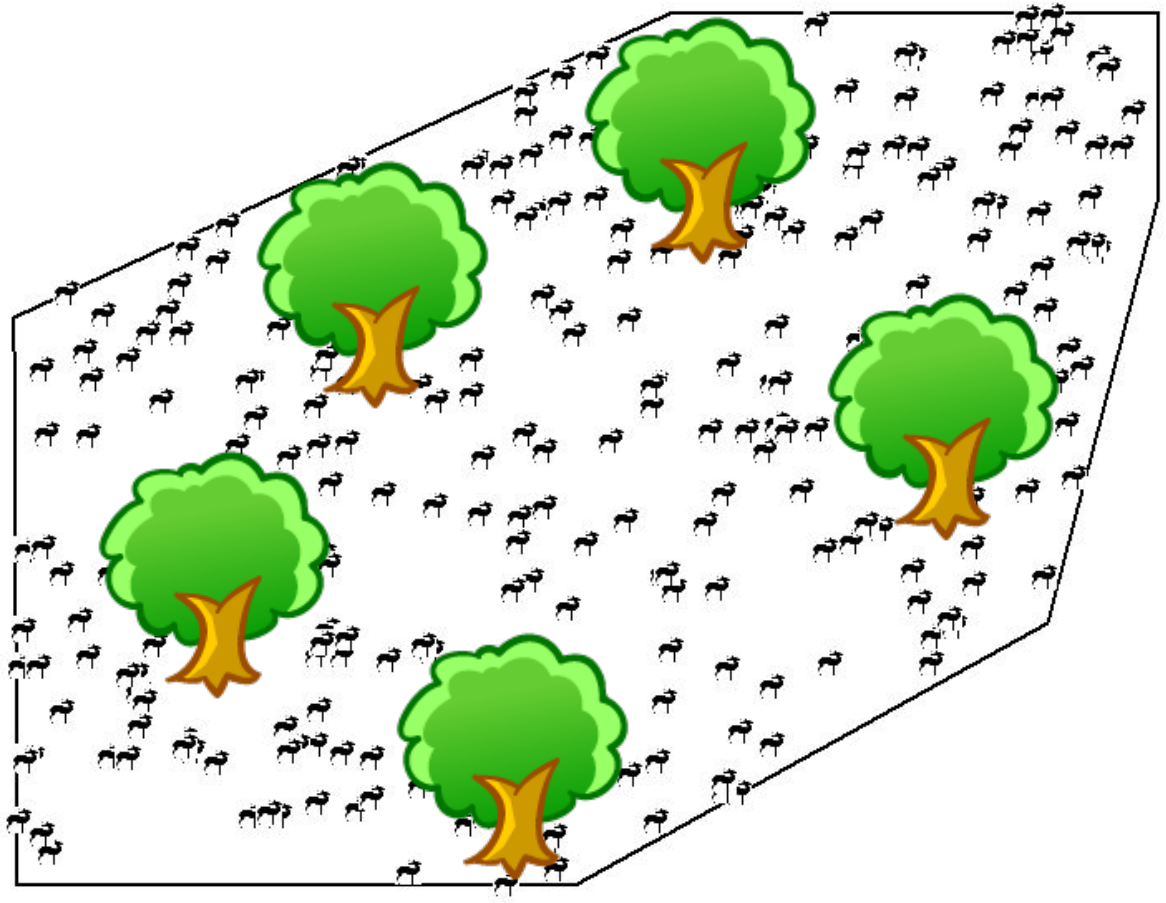
☹



How to quantify…

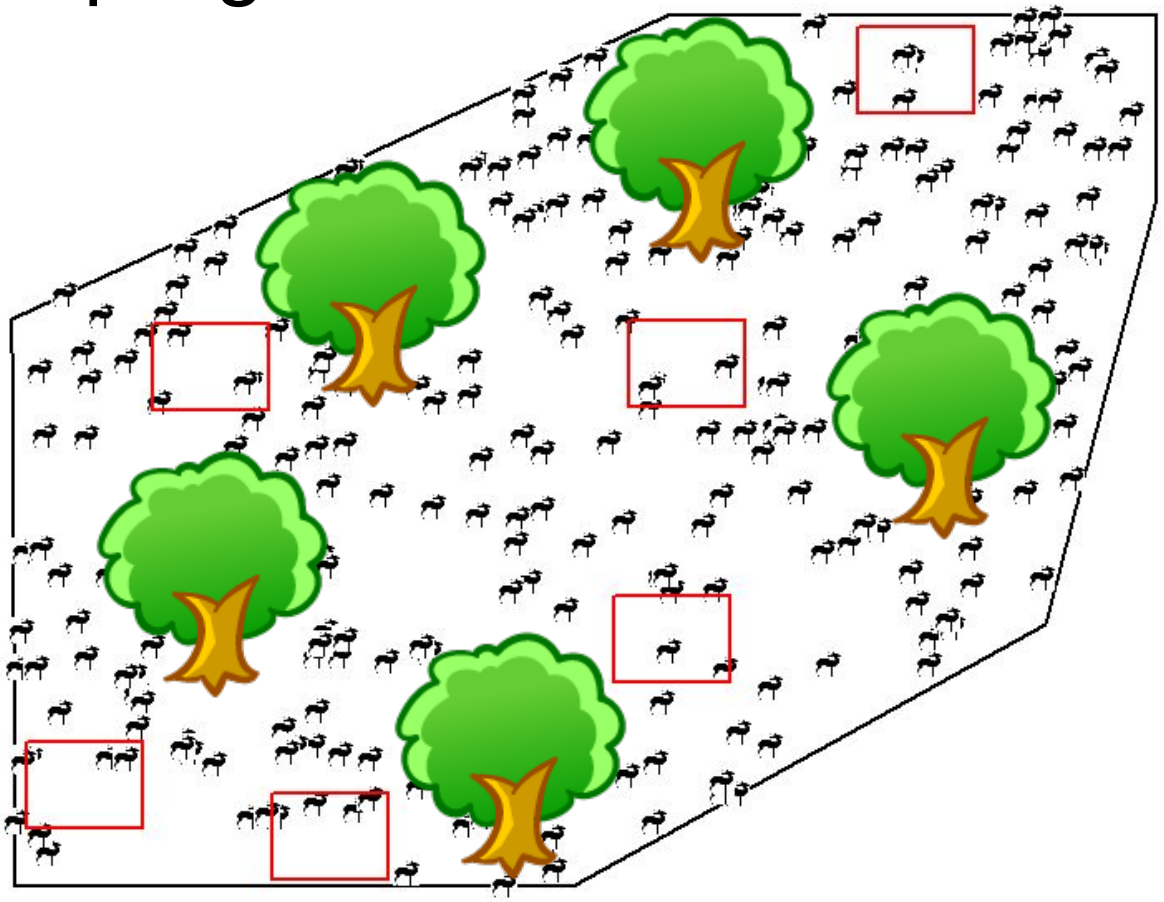
- Estimate still????
☹☹☹





How to quantify…

- Do sampling!!!
  ☺

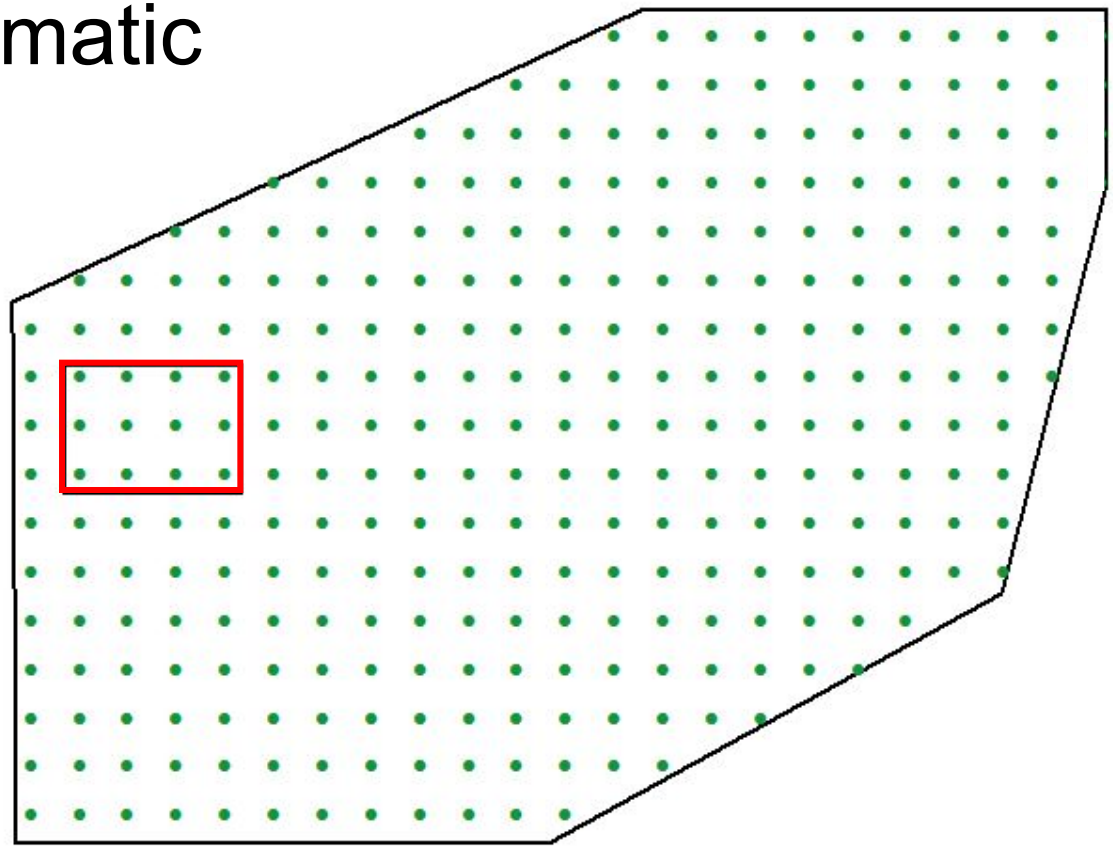


Where to sample?

- Define questions
  - What is to be quantified (Parameter)
- And then…
  - How should it be quantified (sampling protocol/method)
  - When should it be quantified
  - Where should it be quantified (defining samples)

Distribution of object of interest

- Systematic

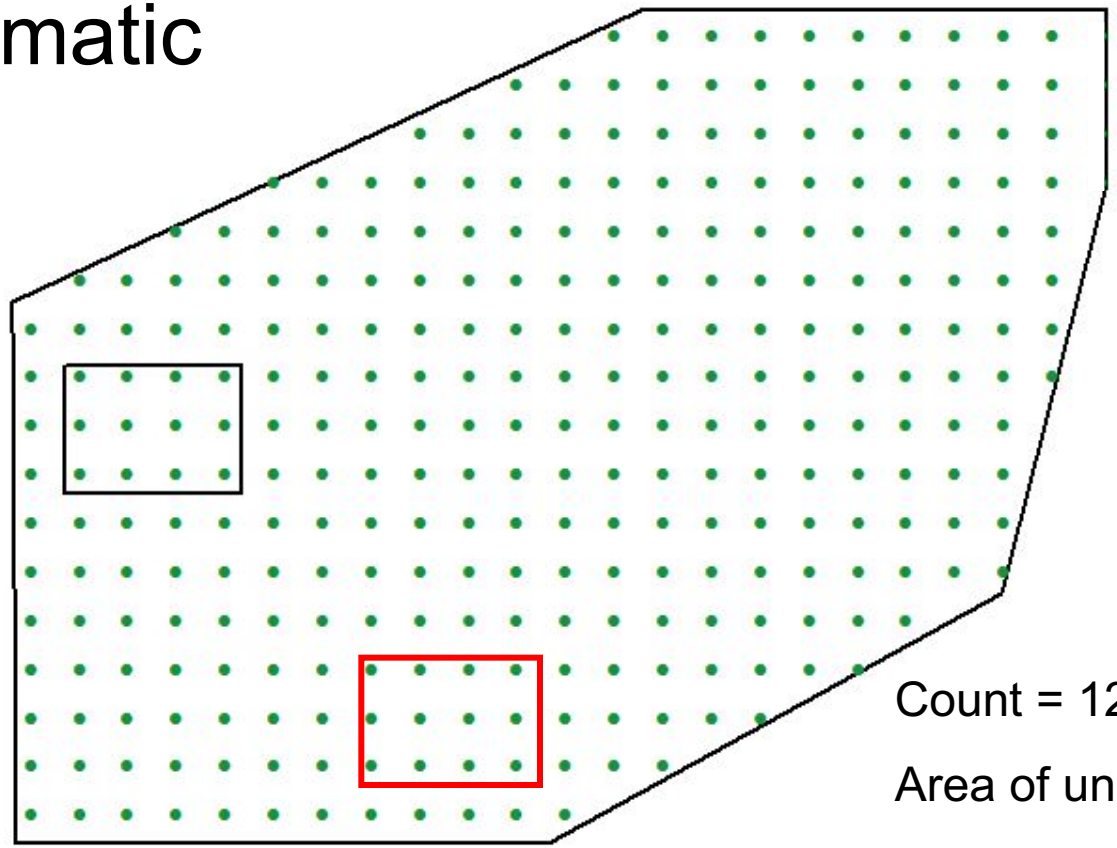


$a = area\ of\ unit$
$c = count$
$D = Density$
$A = Total\ Area$
$N = Abundance$

$D = c/a$
$N = D.A$

Distribution of object of interest

- Systematic



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$D = \_\_?$
$N = \_\_?$

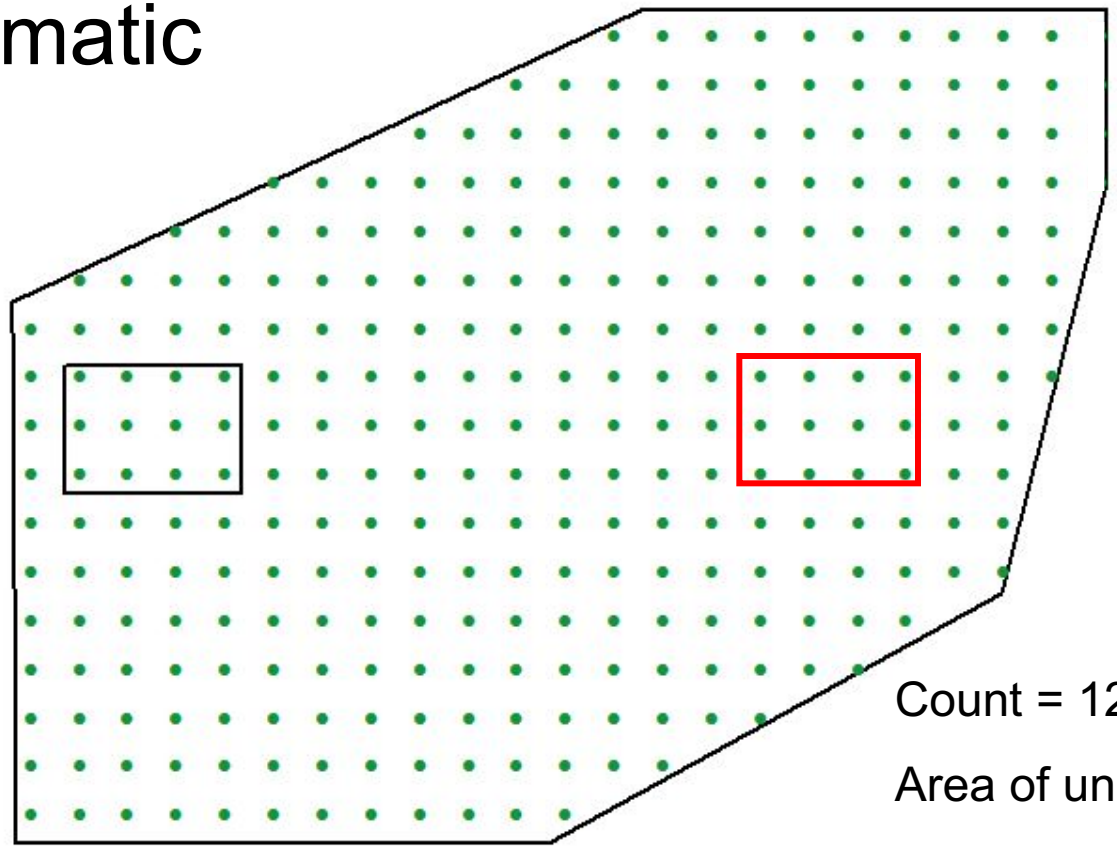
Count = 12 points

Area of unit = 0.4 km^2

Total area =10 km^2

Distribution of object of interest

- Systematic



$a = area\ of\ unit$
$A = Total\ Area$
$c = count$
$N = Abundance$
$D = Density$

$D = c/a$
$N = D.A$

$D = 30$
$N = 300$

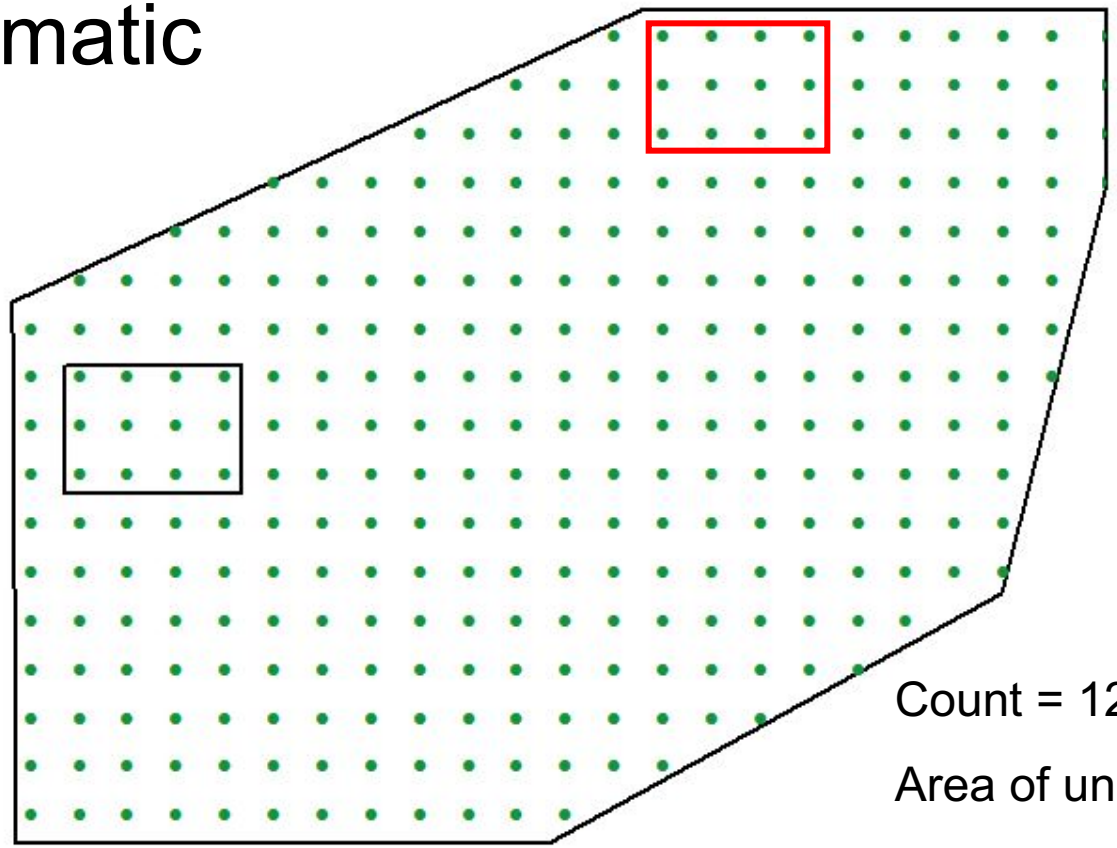
Count = 12 points

Area of unit = 0.4 km^2

Total area =10 km^2

Distribution of object of interest

- Systematic



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$D = 30$
$N = 300$

Count = 12 points

Area of unit = 0.4 km^2

Total area =10 km^2

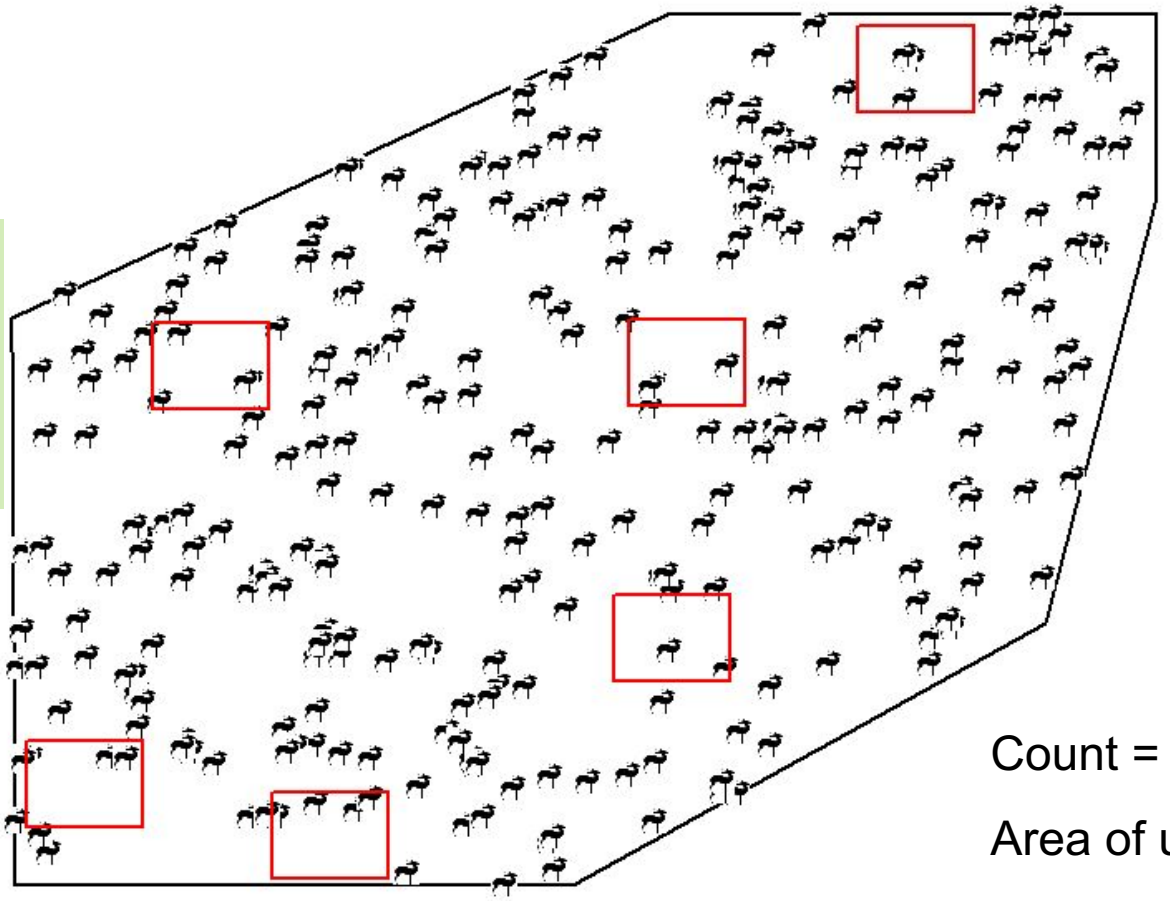
Distribution of object of interest

- Random

$a = area\ of\ unit$
$A = Total\ Area$
$c = count$
$N = Abundance$
$D = Density$

$D = c/a$
$N = D.A$

$D = \_\_?$
$N = \_\_?$



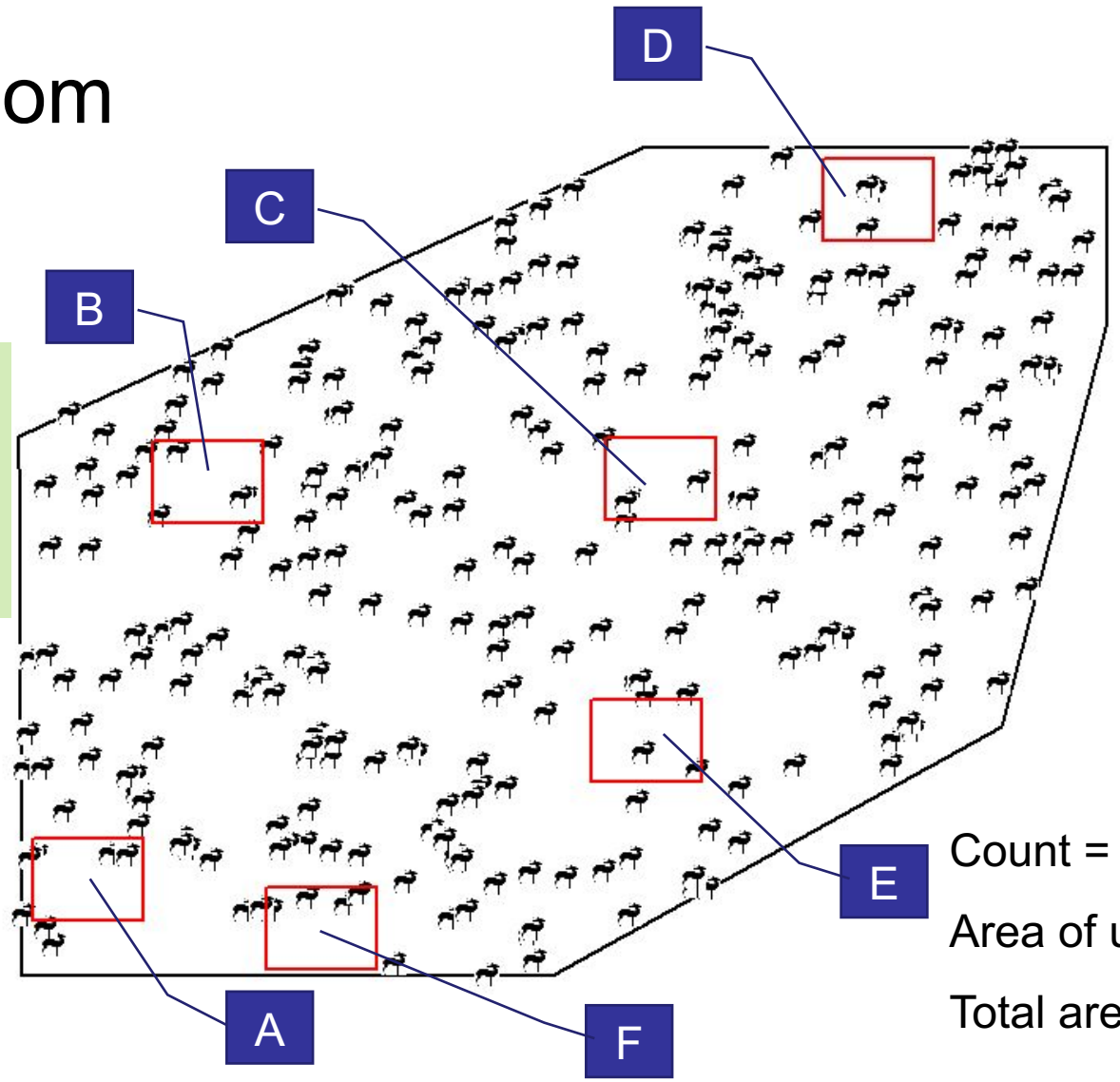
Count = ?

Area of unit = 0.1 km^2

Total area =10 km^2

Distribution of object of interest

- Random



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$c = count$
$N = Abundance$
$D = Density$

$D = c/a$
$N = D.A$

$D = \_\_?$
$N = \_\_?$

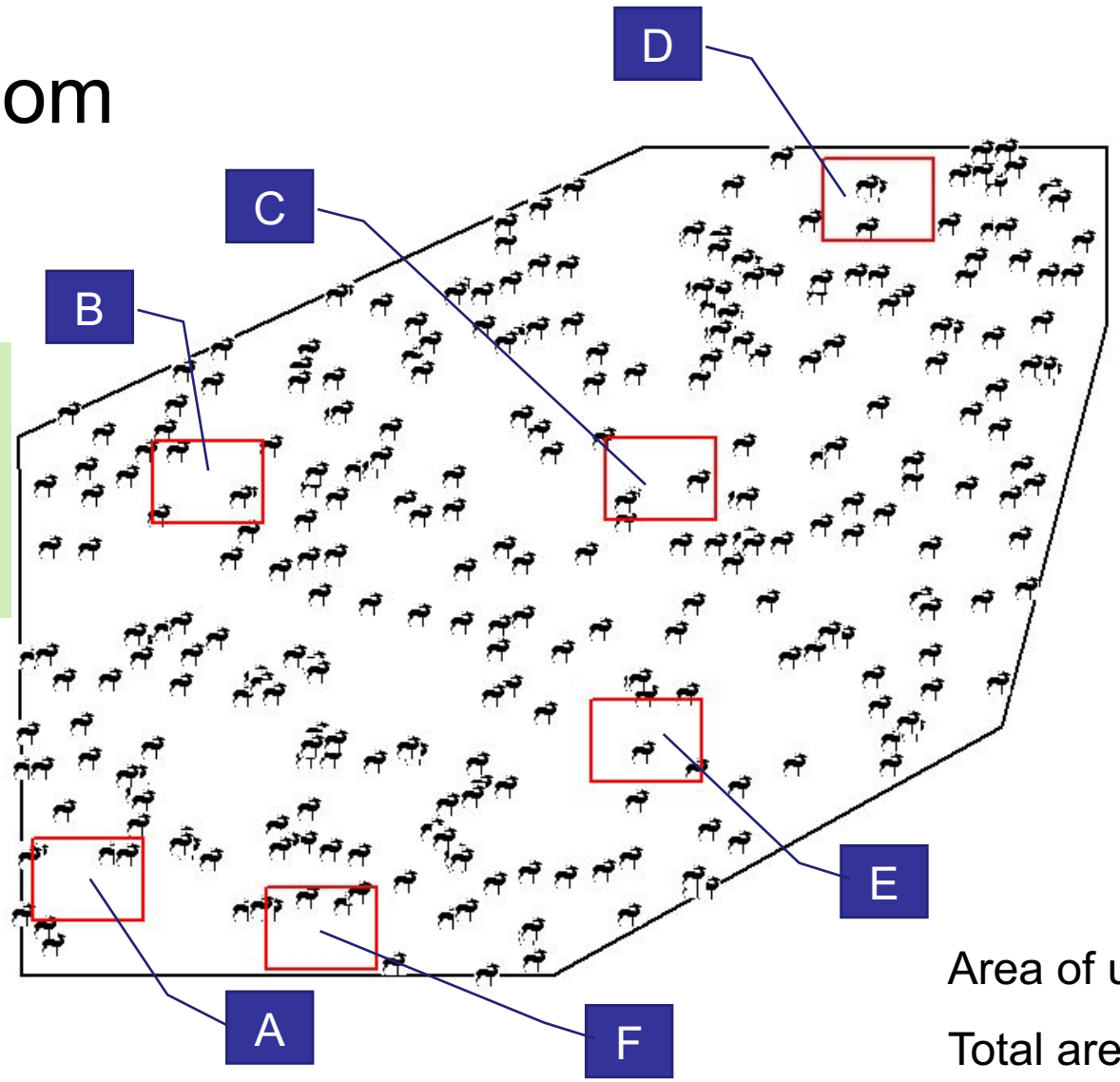
Count = ?

Area of unit = 0.1 km^2

Total area =10 km^2

Distribution of object of interest

- Random



Unit	Count
A	4
B	4
C	3
D	3
E	2
F	5
Mean Count	**3.5**

$$\text{Mean } (\bar{x}) = \frac{\sum x}{n}$$

$a = area\ of\ unit$
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$D = \_\_?$
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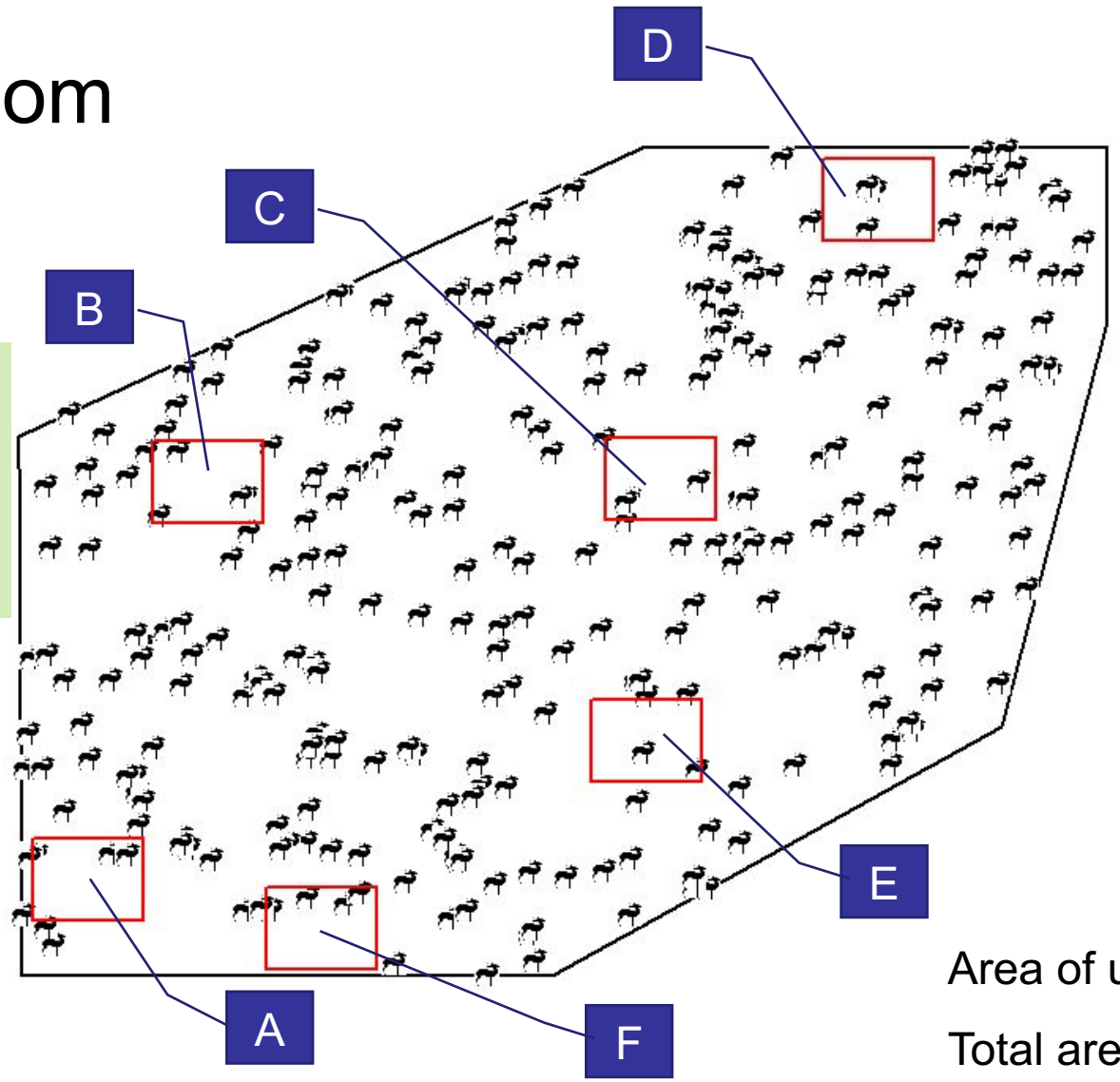
Area of unit = 0.1 km^2

Total area =10 km^2

Distribution of object of interest

- Random



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F	5
Mean	**3.5**

$a = area\ of\ unit$
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$c = count$
$N = Abundance$
$D = Density$

$D = c/a$
$N = D.A$

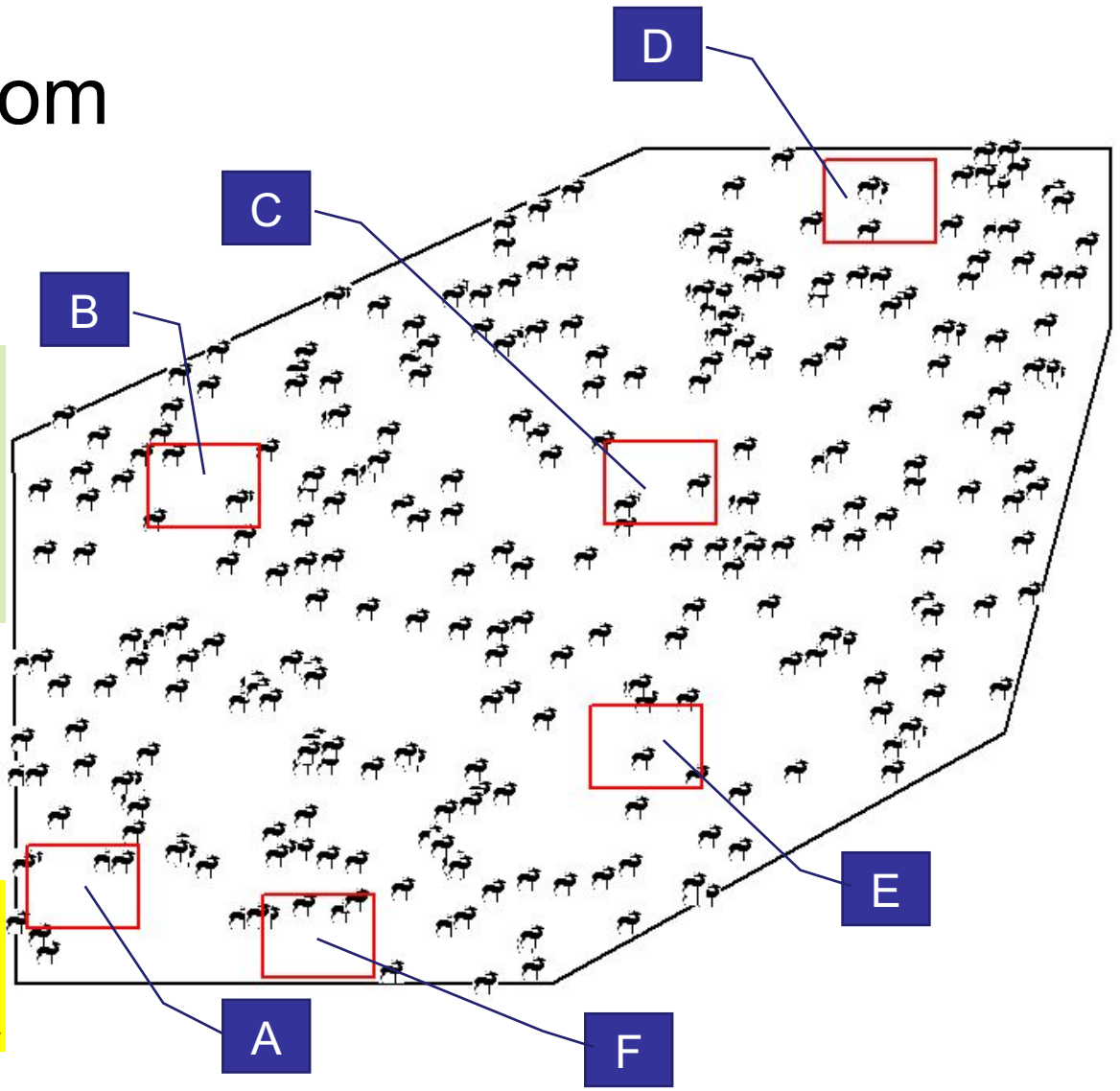
$D = 35$
$N = 350$

Area of unit = 0.1 km^2

Total area =10 km^2

Distribution of object of interest

- Random



Unit	Count
A	4
B	4
C	3
D	3
E	2
F	5
Mean	3.5
StDev	1.04
95% CI	2.7-4.3

$a = area\ of\ unit$
$A = Total\ Area$
$c = count$
$N = Abundance$
$D = Density$

$D = c/a$
$N = D.A$

$D = 35 \pm x$
$N = 350 \pm x$

Time for lego